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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,373	03/04/2002	Cary R. Clark	26180.0002	5908

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EXAMINER
DIAMOND, ALAN D

ART UNIT	PAPER NUMBER
1753	6

DATE MAILED: 07/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

A 8-6

Office Action Summary	Application No.	Applicant(s)	
	10/086,373	CLARK ET AL.	
	Examiner	Art Unit	
	Alan Diamond	1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-67* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-67* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 July 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Objections

1. Claims 1, 2, and 25 are objected to because of the following informalities: In claim 1, at line 5, the word "and" should be inserted after "device;" At line 3 in each of claims 2 and 25, the word "an" should be changed to "a". Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 5, 16, 21, 23, 28, 38, 43, 45, 47, 49 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

At line 2 in each of claims 5, 16, 28, 38, 47, and 49, the term "a group consisting of" is improper Markush language and should be changed to "the group consisting of".

Claim 5 is indefinite because "said collapsed position" at line 1 lacks positive antecedent support in claim 2. It is suggested that claim 5 be amended so as to depend from claim 4.

At line 1, in each of claims 21 and 43, the term "grid-like" is indefinite because it is not clear how close to being a grid the array of devices must be in order to be considered grid-like. It is suggested that said term be changed to "grid".

At line 2 in each of claims 23 and 45, the term "substantial portion" is indefinite because it is subjective. It is suggested that said term be changed to "portion".

Each of claims 23 and 45 is indefinite because it is not clear exactly which array of devices is being referred to by the term "said array of devices" at line 2 in each of said claims. It is suggested that said term be changed to "said plurality of devices".

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-17, 19-39, and 41-67 are rejected under 35 U.S.C. 102(b) as being anticipated by Kester, U.S. Patent 6,031,178.

As seen in Figure 1, Kester teaches a number of rectangular solar cell panels (10, 12, 14, 16) interconnected by means of hinges (see col. 3, line 49 through col. 4, line 24). Hinge (22), for example, reads on the instant first hinging means; and hinge (24), for example, reads on the instant second hinging means (see Figure 1). A flexible torsion rod (32) extends across panel (12), with one end inserted in hinge (22) and another end inserted in hinge (24) (see Figure 1; and col. 3, lines 49-67). Since Kester teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

6. Claims 1-17, 19-39, and 41-67 are rejected under 35 U.S.C. 102(b) as being anticipated by Dillard, U.S. Patent 3,690,080.

Dillard teaches a deployable panel (14) for a spacecraft solar array, the panel having a number of panel sections (28) (see Figures 1-5; and col. 2, line 35 through col. 3, line 67). There are multiple spring clips (44) which read on the instant hinging

means; and booms (16) which read on the instant edge stiffeners (see Figures 1-5; col. 3, lines 17-30; and col. 4, lines 26-59). Since Dillard teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

7. Claims 1-17, 19-39, and 41-67 are rejected under 35 U.S.C. 102(b) as being anticipated by Cruyssen et al, EP 884241 A1.

Cruyssen et al teaches a satellite having solar panel (20) comprising panels (21 to 26) (see Figure 1; and col. 2, lines 45-57). When hinges between the panels are used, they read on the instant means for bracing, and an example of a hinge is seen in 4c and has hinge parts (403, 404, 405) (see also col. 5, lines 34-51). When hinges are not used, the flexible sections (202, 204, 206, 208, 210) of ridge (200) read on the instant hinging means, and the flexible sections (302, 304, 306, 308, 310) of ridge (300) also read on the instant hinging means (see col. 5, lines 21-30; and Figure 4b). Said ridges (200, 300) also read on the instant edge stiffener. Since Cruyssen et al teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 1-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kester, U.S. Patent 6,031,178, in view of Fairbanks et al, "Adaptation of Thin-Film

Photovoltaic Technology for Use in Space," 26th PVSC, September 30 to October 3, 1997, pages 979-982.

As seen in Figure 1, Kester teaches a number of rectangular solar cell panels (10, 12, 14, 16) interconnected by means of hinges (see col. 3, line 49 through col. 4, line 24). Hinge (22), for example, reads on the instant first hinging means; and hinge (24), for example, reads on the instant second hinging means (see Figure 1). A flexible torsion rod (32) extends across panel (12), with one end inserted in hinge (22) and another end inserted in hinge (24) (see Figure 1; and col. 3, lines 49-67). Kester teaches the use of its interconnected solar panels for a satellite (see Figures 6a and 6b; and col. 6, lines 20-31). Kester teaches the limitations of the instant claims other than the difference which is discussed below.

Kester does not specifically teach that the solar cells in its panels are copper-indium-gallium-selenide cells. Fairbanks et al teaches copper-indium-gallium-diselenide (CIGS) cells that can be used to power satellites (see the entire Fairbanks et al reference). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used CIGS solar cells to power Kester's satellite because CIGS solar cells can be used to power satellites, as taught by Fairbanks et al.

10. Claims 1-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dillard, U.S. Patent 3,690,080, in view of Fairbanks et al, "Adaptation of Thin-Film Photovoltaic Technology for Use in Space," 26th PVSC, September 30 to October 3, 1997, pages 979-982.

Dillard teaches a deployable panel (14) for a spacecraft solar array, the panel having a number of panel sections (28) (see Figures 1-5; and col. 2, line 35 through col. 3, line 67). There are multiple spring clips (44) which read on the instant hinging means; and booms (16) which read on the instant edge stiffeners (see Figures 1-5; col. 3, lines 17-30; and col. 4, lines 26-59). Dillard teaches the limitations of the instant claims other than the difference which is discussed below.

Dillard does not specifically teach that the solar cells in its panel are copper-indium-gallium-selenide cells. Fairbanks et al teaches copper-indium-gallium-diselenide (CIGS) cells that can be used to power satellites, i.e., spacecraft (see the entire Fairbanks et al reference). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used CIGS solar cells to power Dillard's spacecraft because CIGS solar cells can be used to power spacecraft, as taught by Fairbanks et al.

11. Claims 1-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cruyssen et al, EP 884241 A1, in view of Fairbanks et al, "Adaptation of Thin-Film Photovoltaic Technology for Use in Space," 26th PVSC, September 30 to October 3, 1997, pages 979-982.

Cruyssen et al teaches a satellite having solar panel (20) comprising panels (21 to 26) (see Figure 1; and col. 2, lines 45-57). When hinges between the panels are used, they read on the instant means for bracing, and an example of a hinge is seen in 4c and has hinge parts (403, 404, 405) (see also col. 5, lines 34-51). When hinges are not used, the flexible sections (202, 204, 206, 208, 210) of ridge (200) read on the

instant hinging means, and the flexible sections (302, 304, 306, 308, 310) of ridge (300) also read on the instant hinging means (see col. 5, lines 21-30; and Figure 4b). Said ridges (200, 300) also read on the instant edge stiffener.

Cruyssen et al does not specifically teach that the solar cells in its panels are copper-indium-gallium-selenide cells. Fairbanks et al teaches copper-indium-gallium-diselenide (CIGS) cells that can be used to power satellites (see the entire Fairbanks et al reference). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used CIGS solar cells to power Cruyssen et al's satellite because CIGS solar cells can be used to power satellites, as taught by Fairbanks et al.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patents 4,155,524, 5,785,280, 6,175,989, 6,284,966, and 6,437,232, and WO 00/10207 are hereby made of record.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan Diamond whose telephone number is 703-308-0840. The examiner can normally be reached on Monday through Friday, 5:30 a.m. to 2:00 p.m. ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 703-308-3322. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Alan Diamond
Primary Examiner
Art Unit 1753

Alan Diamond
July 21, 2003